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ABSTRACT

During the National Institute on Improving Vocational Education Evaluation (University of Arkansas, August 4-8, 1969) participants had some useful viewpoints on the evaluation process. These brief guidelines summarize their viewpoints on: (1) the role of evaluation in the decision-making process, (2) scope and objectives of vocational education and their relationship to evaluation, (3) basic data requirements for effective evaluation, (4) appropriate techniques for obtaining the data needed, (5) procedures for organizing, interpreting, and disseminating evaluative information, and (6) administrative procedures effective in implementing a viable evaluation program. Although participants agreed on the purposes of evaluation, they split on whether evaluation should be process oriented or product oriented. Several suggestions were made for improvement of evaluation through better coordination and techniques. The full report of the Institute, where these guidelines appear as Appendix H, is available as VT 012 305 (RIE, May 1971). (BH)

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Guide To Improving Vocational Education

COLLEGE OF EDUCATION
UNIVERSITY OF ARKANSAS
FAYETTEVILLE, ARKANSAS

GUIDE
to
IMPROVING VOCATIONAL EDUCATION EVALUATION

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FOREWORD

Short-term training institutes represent one of a variety of methods being used to improve the status of vocational education evaluation. In addition to developing leadership competencies needed in evaluation, another purpose of these institutes has been to draw upon the talents of the consultants and participants in order to help develop improved strategies and procedures of evaluation.

In keeping with these purposes, a major part of this guide is concerned with presenting viewpoints on which there was general consensus of agreement among the participants attending the National Institute on Improving Vocational Education Evaluation which was held August 4-8, 1969, at the University of Arkansas. Attention is also given to points and issues on which there seemed to be little agreement among either the consultants or the participants. Finally, some suggestions on how evaluation can be improved are offered.

Consultants for the institute included: William C. Arnwine, Consultant, Research Coordination Unit, University of Arkansas, Fayetteville, Arkansas; Harold M. Byram, Professor of Education, Michigan State University, East Lansing, Michigan; John K. Coster, Director, Center for Occupational Education, North Carolina State University, Raleigh, North Carolina; Edwin Crawford, Senior Program Officer, Program Evaluation, U.S. Office of Education, Washington, D.C.; William Cummens, Senior Program Officer, U.S. Office of Education, Dallas, Texas; Caroline E. Hughes, Chairman, State Advisory Council, Cushing, Oklahoma; Jacob J. Kaufman, Director and Professor of Economics, Pennsylvania State University, University Park, Pennsylvania; Jack Michie, Member, National Advisory Council on Vocational Education, Montgomery, Alabama; Jerome Moss, Jr., Co-Director, Research Coordination Unit, University of Minnesota, Minneapolis, Minnesota; Robert A. Mullen, Associate Director of Vocational Education, Department of Public Instruction, Raleigh, North Carolina; Harold Starr, Evaluation Project Director, Center for Vocational and Technical Education, Columbus, Ohio; Robert E. Taylor, Director, Center for Vocational and Technical Education, Columbus, Ohio; Richard Whinfield, Administrative Associate, Center for Studies in Vocational and Technical Education, Madison, Wisconsin.

The project director acknowledges the assistance of many other individuals with this project. Eight small group leaders and eight recorders accepted the difficult assignment of seeking group consensus on several topics from the nearly 100 participants. Mrs. Peggy Patrick, Director of Program Analysis for the Vocational Division of the State Department of Education, Little Rock, Arkansas, made many helpful suggestions.

This guide also appears as Appendix H of the *Final Report: Institute for Improving Vocational Education Evaluation.* Readers who are interested in pursuing the topics contained in this guide in greater depth are referred to the presentations and group reports which are published in full in the final report. The report is available on microfiche or in hard copy through the Educational Resources Information Center (ERIC) Document Reproduction Service.

Fayetteville, Arkansas
December, 1970

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INTRODUCTION

Both the Vocational Education Act of 1963 and the Vocational Education Amendments of 1968 provide for, and in fact require, evaluation of vocational education programs. The Declaration of Purpose states in part that funds are authorized to . . . "improve existing programs of vocational education". . . and that persons of all ages . . . "will have ready access to vocational training or retraining which is of high quality" . . . .[13] [14]

Before existing programs can be "improved" and before access to programs of "high quality" can be insured, adequate systems and techniques of evaluation must be developed and implemented. The use of quick and often highly subjective devices for appraising the quantity, quality, and cost-effectiveness of vocational programs will not suffice. Educators are gradually recognizing the importance and complexity of the evaluation process but have not yet taken the necessary steps to fully develop and operationalize effective evaluation programs.

Stufflebeam appropriately summarized the status of evaluation when he said "This measurement of efficacy or *evaluation,* is an infant on the educational scene. It lacks an established body of knowledge appropriate to education, sufficient personnel with the necessary competencies and experience, and the techniques and skills to satisfy the legal requirements or needs of the Congress and education." [16]

Moss listed three basic assumptions as justification for his paper on the evaluation of occupational education programs: "Program evaluation is essential to systematic improvement in educational efficiency and effectiveness; an intensification of evaluation activity is highly desirable; much of what little has been done to date in the name of program evaluation is of questionable usefulness." [11]

It is certainly true that most evaluative efforts have failed to provide the valid and reliable data needed to support sound educational decision-making. Reports often contain only impressionistic information and rely heavily on subjective determinations. Past evaluations have focused almost entirely on the educational process—curricular organization, staff activities and qualifications, and physical facilities while ignoring program inputs and program outcomes. Evaluations have too often been an after thought, partial and sporadic rather than planned, thorough, and continuous.

Evaluation has many meanings and connotations to most people, and vocational educators are no exception. Very commonly evaluation is used to refer to the assessment of individuals rather than programs. To avoid misunderstanding the authors wish to make it clear at the outset that in this guide, evaluation is used to refer only to program evaluation. It is also viewed as a process which seeks program improvement and modification rather than program condemnation.

Further clarification may be obtained by offering the following formal definition of program evaluation:

> Program evaluation is the continuous process of collecting valid and reliable data for the purpose of comparing program outcomes with program objectives. The process is conducted to provide useful information for making sound educational decisions. Educational decisions refer to making a choice among alternatives for action in response to educational needs and limited resources.

Recognizing that sound evaluation techniques have played a very minor role in the educational decision-making process heretofore, attention is first given to a consideration of what the role of evaluation in educational decision-making ought to be.

Role of Evaluation in the Decision-Making Process

There is strong agreement that sound decisions cannot be made without adequate evaluation. Perhaps, of all the many and varied issues which can be raised concerning evaluation, the easiest one on which to get unanimous agreement is that evaluation constitutes an essential input to the decision-making process.

For too long subjective opinion, tradition, authority, and personal experiences have played a major role in most educational decision-making. It is also apparent at this time that a large part of the rather meager evaluation effort has been directed primarily at evaluating processes rather than the product. What *little* product evaluation has been done has in most cases, involved a mere "head counting" procedure to determine the number of former students who are employed in an occupation directly related to the vocational program in which they had enrolled.

With few notable exceptions, cost-effectiveness as a method of evaluating vocational and technical education programs has been either overlooked or given up quickly as being too difficult, and yet the fact remains that whenever an educational administrator decides to spend more on vocational education rather than on general education, a type of cost-benefit decision, though highly subjective it may be, has been made.

The role of evaluation should be viewed as a continuous process of obtaining objective data essential to effective and efficient decision-making and program planning, and must not be viewed as an end product in and of itself. In order for an evaluation to be effective and accepted, it must be a thorough and valid assessment. In order to be efficient, the evaluation effort must be a coordinated and articulated effort which avoids unnecessary duplication and yet provides the factual evidence needed for decision-making at the local, state, and national level.

Another way to view the role of evaluation in decision-making is that it provides information which helps the program manager or decision maker do a better job of allocating the limited resources available to him. He uses the information to help him apply the resources so as to maximize the attainment of program objectives. The interrelationship of objectives to resources, program outcomes and other important aspects of the planning and evaluation process is illustrated by Coster and Morgan in their model which is reproduced as Figure I. For a detailed description of the planning and evaluation model and its various components in relation to the decision maker and program manager, the reader is referred to the original paper.[2]

As the competition for financial resources becomes keener and the accountability for these funds more demanding, program evaluation, although admittedly a difficult and largely underdeveloped activity at this time, will be viewed not as desirable or essential but as an absolutely mandatory ingredient to the decision-making process at every level. Continuation, expansion and redirection of vocational programs in the future will have to be justified by program managers on the basis of valid and objective data.

Congress has clearly indicated the role it wants evaluation to play. Vocational education is to develop an evaluation system that will ensure that state and federal funds are being spent in the most effective and efficient manner possible. The law requires the appointment of a National Advisory Council and State Advisory Councils whose major role will be to evaluate vocational education programs under their jurisdiction and to prepare annual reports of their findings and recommendations. The advisory councils are only two examples of the many direct and indirect references to the importance of evaluation, which are interspersed throughout the 1968 Amendments.

Scope and Objectives of Vocational Education and Their Relationship to Evaluation

The Vocational Education Amendments of 1968 also contain a congressional mandate for vocational education to redirect, expand, and broaden its scope and objectives. National objectives are stated in terms of target groups and target areas to be served and special priorities to be emphasized. The scope of the vocational education enterprise

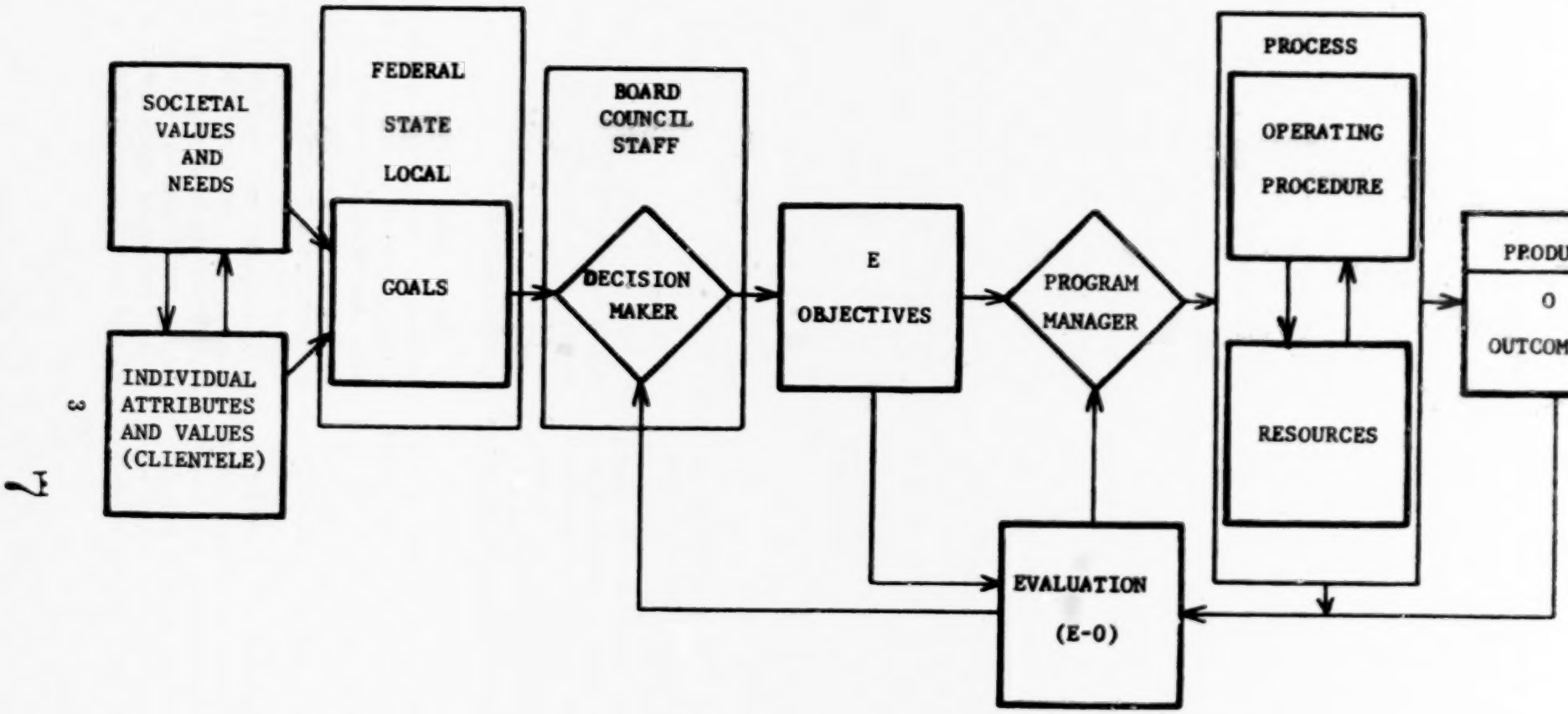

FIGURE 1

A PLANNING AND EVALUATION MODEL

embraces a variety of programs, populations, and services. These programs and services are to be based jointly on the needs, interests, and abilities of people as individuals as well as on providing training which is realistic in terms of existing and anticipated job opportunities. The programs are to provide appropriate preparation for persons of all ages which will enable them to enter and make satisfactory advances in employment.

The relationship of program objectives to evaluation has already been suggested by our definition of program evaluation and is illustrated in Figure I. Stated program objectives, which are the anticipated or expected outcomes, provide one with a basis for comparison with the product or actual outcomes. Without clearly stating objectives to provide a basis for comparison, there can be no evaluation.

Another point on which unanimous agreement is easy to obtain is on the general inadequacy of current program objectives. Objectives at the state and local level, if available at all, are usually rather general and vaguely stated. They usually avoid attending to the specifics of individual programs and are not stated in measurable terms. Under these conditions programs and services are not easily subjected to either valid or objective assessment.

The importance of clearly specified objectives based on national, state, and local goals is widely accepted. Much work needs to be done in this area, however, as most educators are niether trained nor experienced in writing measurable objectives. Inservice training programs are going to be needed before most vocational teachers or state staff personnel will be capable of stating objectives in measurable terms.

The work of Starr and associates at the Ohio Center on the development of state level program objectives and goal statements is especially noteworthy.[15] They have developed and are now testing a set of quantitative statements for each of four broad program objectives. These statements are designed to permit objective measurement of the extent to which: (a) target populations are being served (b) local schools assure program quality (c) programs are accessible to needy students and (d) state agencies use follow-up and other data in their planning. Once a state has assessed its starting position with relation to each goal and objective, it can set realistic targets for improvement and later evaluate their accomplishment objectively.

Work is also underway in several states on the establishment of written behavioral objectives at the local level. Massachusetts, for example, is undertaking the development of a file of behavioral objectives for each program and the development of a test file for each objective.[10] Several books on writing behavioral objectives have also been published in the last few years.

If we are to compare program outcomes with program objectives as our definition of program evaluation calls for, then we must establish such objectives in a measurable format *before* we are really ready to evaluate. See Attachment A for a sample format developed by Dr. Jim Hannemann, Vocational Consultant at Oakland Schools, Pontiac, Michigan. As a preliminary step towards determining the effectiveness of the Oakland Vocational Education Centers in the education of youth and adults, he has developed a tentative set of program objectives and identified specific terminal behavior characteristics and discriminatory levels for each objective.

Basic Data Requirements for Effective Evaluation

Anyone who is faced with the task of evaluating a program or programs must eventually answer the question, "What types of data shall be collected?" This is an important question facing every evaluator and yet there seems to be little agreement on what is really needed.

Much disagreement centers around whether to emphasize evaluation of the program process or the program product or both. As mentioned earlier the major emphasis in the past has certainly been on evaluating the process. There are inherent weaknesses involved in utilizing this approach as the major or the only method of evaluation. Moss points out that, "Program characteristics cannot be used as evaluative criteria, for, by so doing, we assume, rather than prove, that those characteristics are good.... Almost none of our cherished "principles" of

vocational education practice have been empirically validated." [11] It is generally agreed that having information on the educational process is desirable but that such information per se does not guarantee that the objectives of the program have been obtained.[2]

If we are willing to accept the definition of program evaluation set forth earlier—that it is the continuous process of collecting valid and reliable data for the purpose of comparing program outcomes with program objectives—it would seem logical that the primary criteria by which instructional programs are to be evaluated must be the products or instructional outcomes. As Coster and Morgan put it "The crux of the evaluative problem is the congruence between the actual outcomes of the program and the objectives of the program. The prime concern of the decision-maker is the extent to which these two entities are in juxtaposition." [2] Thus, simply put, the basic data requirements for effective evaluation are those data which tell us how well our previously stated objectives are being attained.

Appropriate Techniques for Obtaining the Data Needed

After determining the type of data to be collected, careful consideration should be given to selecting the most appropriate techniques available for obtaining it. Although a wide variety of techniques are available, two which are appropriate for obtaining data on program outcomes, the mailed questionnaire and the interview technique, merit special attention.

The most widely used and accepted technique is that of the mailed questionnaire or survey form. Although the follow-up questionnaire is being used and widely recommended, it presents problems when attempting to reach certain groups of people. A prime example of a problem situation is getting representative follow-up data on *former* students. Notice that the group of concern in this case is not just program graduates but also program dropouts.

Experience has shown that very few dropouts will complete and return a mailed follow-up form. If the evaluation effort is to be geared to provide diagnostic information about the strengths and weaknesses of existing programs so that we, for example, will be able to achieve zero rejects, then we must obtain feedback from all whom the programs are designed to serve and not just the successful graduates.

To obtain feedback from the non-respondent, although more costly, the interview technique on at least a sample basis will probably have to be employed. While the interview technique has its advantages, few if any schools would have the necessary resources for interviewing all former students of selected classes. Where the follow-up procedure is used, consideration should be given to using a combination of the two techniques.

In the Michigan Multi-State Project, Byram and others have developed a guide for constructing a follow-up instrument which appears promising.[9] Basically, it calls for using identified program objectives as a frame of reference in developing and selecting follow-up questions which will obtain the information needed to help evaluate attainment of each objective. Without the use of such a guide or reference many unnecessary questions are likely to be asked and some necessary ones omitted.

Many states such as Arkansas, Colorado, Arizona, and indeed, most other states and some local education agencies have developed follow-up instruments and procedures which would be helpful to anyone devising a follow-up system.

Although follow-ups focus upon former students, they should *not* be the only means used for studying program outcomes. Assessment of program outcomes through experiments, employer feedback, attitude and achievement tests, advisory committees, use of consultants, and cost-effectiveness analysis should be considered. The final selection of the approaches used will depend upon the specific purposes of the evaluation, available time and manpower cost, and other factors.

For those planning to conduct process evaluations, a large number of instruments are available. To name a few, North Carolina, Pennsylvania and New York have all developed instruments containing evaluative

criteria which can be used to subjectively judge the characteristics of various vocational programs. The National Study of Secondary School Evaluation has recently finished preparation of the fourth edition of *Evaluative Criteria* which is widely used to evaluate local programs by the six regional accrediting associations.[12]

Procedures for Organizing, Interpreting, and Disseminating Evaluative Information

Even though appropriate techniques are used and good evaluative data collected, unless it is organized into an attractive and meaningful format and style, and the report disseminated to the right persons, little useful purpose will result. The report may be organized by strengths and needs, by program objectives, or in some other manner that is logical for those who are making and using it. The key point to remember is that the collection of the best available data is of little value unless the reports provide concise and worthwhile insight into problem areas or reinforce the successful elements of operational programs.

Interpretation of the data into findings or recommendations is another crucial but essential task of evaluation. Whenever possible the data should be analyzed to show existing relationships between program inputs including student characteristics, program processes; and program outcomes. The interpretation of data must be accurate and the resultant findings documented. *Statistical data should be illustrated with charts and graphs and accompanied by a succinct narrative.*

Another important step remains, that of disseminating the report, or preferably reports, to all who were involved in the evaluation process and to all who are concerned about the program. The full report should generally be distributed to all of the decision makers and program planners. For wider distribution to other interested individuals and the general public, an abstracted or popularized version is far more desirable and likely to be read. It is especially important to provide feedback to all personnel who assisted in supplying the original data.

Administrative Procedures Effective in Implementing a Viable Evaluation Program

Each agency, whether local or statewide in scope will need to develop its own administrative pattern of operation based on variables pertinent to the particular organization. However, several administrative procedures appear important in developing and implementing any effective evaluation program.

There must be consent and a strong commitment to the evaluation effort by the program administrators. This commitment must be reflected in several ways. Sufficient resources with which to do an effective job must be made available. Personnel must be assigned, allotted adequate time, and given the authority and responsibility to carry out the evaluation.

The administration should assist in developing and maintaining a cooperative and positive attitude on the part of everyone involved in the evaluation effort. Perhaps most important is giving the evaluation program status so that it will be considered a regular and continuing aspect of the educational system. Implementing changes and improvements suggested by the evaluation is one effective way of giving the effort status.

To be effective, evaluation must insure the involvement of those who are to be affected by and responsible for implementing any changes that result from it.

SUMMARY

Before looking at some additional suggestions for the improvement of evaluation a brief recapitulation of some of the points of agreement and points of disagreement regarding evaluation is provided.

There is wide *agreement* that the purpose of evaluation is to provide objective data which will enable program leaders to make more rational administrative decisions, and that evaluation must be recognized as a prerequisite to sound program planning and program improvement. There was unanimous

agreement on our lack of sophistication in stating program objectives. These objectives, it was felt, must be specified in terms which will allow for more precise measurement of the degree of their attainment. There was also general agreement that programs at all levels—local, state, and national—need to be evaluated quantitatively and qualitatively in terms of the specific objectives set forth. A final point of agreement was found in the need for new and better "tools" of evaluation and for refinement of the ones presently available.

The primary point of *disagreement* revolves around whether the evaluation effort should be process oriented or product oriented. Many believe that product evaluation is of much greater importance at our present state of development than is process evaluation. Others are inclined toward seeking a more balanced approach but appear willing, in a trade-off between what is desirable and what is practical, to give priority to product evaluation. A few seem to insist that process evaluations are better understood and accepted by educators and that they therefore offer the more realistic approach at the present time.

Many persons are unable to agree on a definition of evaluation. This is perhaps a reflection of the controversy over whether the process or product approach is most desirable.

A final point of difference is whether local program evaluations ought to be locally directed and initiated, state directed, or state assisted. The viewpoint expressed on this matter is generally a reflection of the person's position of employment.

Suggestions for Improvement of Evaluation

In concluding, a few general suggestions for improving vocational education evaluations seem in order.

1. It is urgent that state departments and local school systems begin to cooperatively and carefully plan for the collection of data needed to evaluate existing programs and plan new ones.

   Even though some of the methods and procedures now available may later prove to be ineffective, an evaluation system should be established as soon as possible in every school and state in the nation. Valid and objective data on which to base program changes is needed by the decision makers now.

2. It is equally urgent that persons at all levels seek to improve available evaluative techniques as well as to develop new and better ones.

   Some developmental work on program evaluation has been done and considerable is now underway, but much more research and testing is needed. One of the most promising techniques: cost-effectiveness analysis needs further development and testing. Cost-effectiveness analysis has great practical potential but unfortunately, lacks, at the present time, sufficient operational utility for widespread use.

3. Evaluation efforts need to be coordinated in order to avoid unnecessary duplication.

   For instance, are the state advisory councils, the state departments of education, and the local schools going to conduct separate follow-ups of the same former students? We would certainly hope not, for the students' sake. Unnecessary duplication of data gathering by the different agencies is both costly and inefficient. To avoid it, close coordination and communication among the agencies involved will be necessary.

4. The implications of the 1968 Amendments for evaluation are many and complex; requiring that we learn and implement those procedures and techniques which will most efficiently aid the decision-making process for the attainment of local, state, and national objectives.

   Is it realistic to expect present or future vocational educators to become competent in evaluation without any training? There must be training in such areas as study design, development of objectives, development and use of appropriate instruments, and in organizing, interpreting, and disseminating the data

collected. Teacher educators will have to prepare a new breed of vocational educator who has competencies in the area of program evaluation. Institutes and other types of inservice training are also necessary to prepare personnel for the job to be done.

5. Evaluation is a challenge to all persons involved in vocational education!

   If vocational educators fail to supply data and information about their own programs using appropriate criteria and methodology, then they will have no recourse but to accept not only the data collected by others but also the value judgments reached by them.

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ATTACHMENT A

Objective: To develop in the students a favorable attitude toward continuing their education after graduation. *

Evidence of Obtaining Objective: If 80 percent of the graduates continue their education by enrolling in one or more of the following educational programs within five years after graduation, the program shall be considered *successful* in developing favorable attitudes towards continued education.

1. Post-secondary technical institute
2. Community or junior college
3. College or university
4. Apprentice program
5. Industrial sponsored training program
6. Private vocational-technical school
7. Correspondence program leading to a certificate or degree
8. Job upgrading program
9. Military job training

If 79 percent or less, but more than 49 percent of the students enroll in one or more of the above programs, the program shall be considered *moderately successful* in meeting the above objective.

If 49 percent or less enroll in one or more of the above programs the program shall be considered *unsuccessful* in meeting the above objective.

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* This is one of a tentative set of program objectives for which specific terminal behavior characteristics and discriminatory levels have been identified by Dr. Jim Hannemann, Vocational Consultant at Oakland Schools, Pontiac, Michigan.